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A SYNOPSIS OF THE AFRICAN SPECIES OF *SCELIO* LATREILLE (HYMENOPTERA: PROCTOTRUPOIDEA, SCELIONIDAE)

By G. E. J. NIXON

(Commonwealth Institute of Entomology)

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With 31 Text-figures

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I. INTRODUCTION AND ACKNOWLEDGMENTS

DURING 1956 and 1957 three members of the Anti-Locust Research Centre—Messrs. R. F. Chapman, D. J. Greathead and G. Popov—carrying out investigations in East and West Africa, made extensive and valuable collections of Scelionid parasites destructive to the eggs of various Acridiids, chief among them being *Locusta migratoria migratorioides* R. and F. These parasites, all of which belong to the genus *Scelio* Latreille, were submitted to the Commonwealth Institute of Entomology for identification. In view of their importance as a factor having a significant effect upon the prevalence of their hosts, it seemed desirable that rather more than a list of names should be provided and that some aid to the recognition of the species should also be made available.

As a consequence I have attempted in the following key to bring together all the African species of *Scelio* in so far as I have been able to recognise them. I have also included whatever material of the genus from Africa already existed in the collection of the British Museum (Nat. Hist.). Only species that I have personally examined are included in the key.

I am much indebted to Dr. Jean Risbec for lending me certain of his own W. African species of *Scelio*. I am also grateful to the Anti-Locust Research Centre for placing at my disposal the collections of parasites on which this synopsis is based.

The types of all new species are in the British Museum (Nat. Hist.).

II. THE GENUS *Scelio* LATREILLE

(= *Enneascelio* Kieffer, syn. n. Type species: *E. exaratus* Kieffer, 1910, Seychelles)

All the species mentioned in the key have two features in common: the scutellum is without any trace of a lateral projection and the postscutellum is simple, that is, it never shows a bidentate condition.

For taxonomic reasons I have extended the geographical region for which the genus is treated in order to include the single known species of *Scelio* from the Seychelles and a new species taken by Popov in E. Arabia because of its very close affinity with certain African species.

(1) *Key to the African species of Scelio (females)*

- 1 Fore wing embrowned with at least one transverse hyaline fascia cutting it immediately proximal to the stigmalis and usually a second cutting it across the feebly indicated radial cell (figs. 27 and 28); propodeum somewhat flattened and subhorizontal with hardly a discrete smooth furrow bordering the posterior orifice, its surface covered evenly with longitudinal wrinkles; towards sides no zone of dense, adpressed pubescence to give it a silvery appearance; except in one species which has such setae on the upper surface of the thorax in front, the thorax and gaster are without thickened, adpressed setae and have instead brownish, mostly erect hairs. (Clypeus never with lobe (convex) between its lateral teeth though medially sometimes with weak angulation; gaster short, broad, with the apical tergite strongly transverse. Group of *pulchripennis* Brues) 2
- Fore wing without contrasting fasciation though often strongly embrowned; propodeum lacking this flattened appearance, having a much deepened, usually smooth furrow bordering the posterior orifice, its sculpture never consisting of even longitudinal wrinkles; hairs of upper surface of thorax and of gaster more or less setiform, thickened, with those of gaster always closely adpressed 8
- 2 Mesoscutum and scutellum highly polished and unsculptured except for small, widely spaced punctures from which arise erect, brown hairs. (Head and thorax dark metallic green; gastral hairs semi-erect to erect; hind tibia without upstanding hairs; vertex and cheeks polished and unsculptured like thorax; fore wing with a pale fascia proximal to stigmalis and sometimes an ill defined, pale elongate cloud in radial cell) nitens Brues
- CAPE PROVINCE: *Okahandja*, xii, 1 ♀; *Katberg*, 4000 feet, xii, 1 ♀ (both R. E. Turner). *Type recorded from Algoa Bay.*
- At least anterior half of scutellum and the line of the notaulices posteriorly marked by some kind of sculpture and then these sclerites are not metallic 3
- 3 Sculpture of mesoscutum reduced to 2-3 ridges at posterior end of notaulic courses and a row of foveae along the posterior margin; scutellum closely, longitudinally ribbed across anterior half; gaster much flattened, highly shining and almost without sculpture, reddish on most of basal half, the colour more pronounced on middle portion. (Pronotum, except lateral, dorsal surface, reddish like base of gaster; hairs of head, mesoscutum and gaster brown, inconspicuous, virtually decumbent; vertex and temples/smooth, with at most scattered punctures; tarsi almost black, the segments more attenuated basally than in the other species of the group and with apical spines darker, longer and more splayed out; fore wing more sharply fasciated than in the other species of the group, appearing predominantly pale with a dark fascia cutting it across base of radial cell and another, very narrow one, between this and base of wing (fig. 28);

setae of paler basal parts of wing almost golden ; antenna with short bristles hardly equal to apical width of pedicel) . . . **princeps** sp. n.

ERITREA : *Wakhiro*, 6 ♀, one the type, 8.xi.1956, bred from eggs of *Catanotops axillaris* Th.; 2 ♀, 13.xi.1956 (these have the entire pronotum and the lateral lobes of the mesoscutum reddish), ex eggs of ? *Catanotops axillaris* Th.; 3 ♀, xi.1956, ex eggs of *Acrotylus longipes* (Charp.) ; 2 ♀ (1 ♂, crippled), 20.xi.1956, ex eggs of *Ochrilidia gracilis* Krauss ; all foregoing bred by D. J. Greathead. E. ARABIA : Oman, 12 ♀, ex eggs of *Thisoicetrus littoralis* Ramb. (G. Popov). A single female taken by Popov in the field at Oman has the thorax and gaster almost entirely red, only the middle lobe of the mesoscutum, the scutellum and the posterior, lateral margins of the gaster being darkened. Compared with the other species of the group, *princeps* is quite unmistakable.

- Mesoscutum with sculpture at least along the middle line as well as along the notaulic courses ; scutellum sculptured virtually all over
- 4 Middle part of mesoscutum (area corresponding to middle lobe) with close, parallel and, except towards front, unbroken ridges on an almost smooth surface ; sides of mesoscutum polished and virtually unsculptured ; lateral, dorsal surface of pronotum and front part of mesoscutum with whitish, semidecumbent setae. (Black. Vertex and temples varying from almost smooth to dull and finely sculptured ; scutellum with finer, closer ridges than mesoscutum ; hind tibia without upstanding hairs ; head and thorax without metallic reflections (but note : entire series teneral and removed artificially from egg pods of host) ; tergite 3 finely striate-reticulate ; fasciation of fore wing very sharp, giving a black and white effect much more marked than in the other species of the group except *princeps*)

corion sp. n.

FRENCH SUDAN : Central Flood Plain, 12 ♀, bred i-iii.1956 ex eggs of *Sherifuria haningtoni* Uvar. It is possible that in fully mature specimens the setae may appear darker and less closely adpressed. This is so in a single female bred from eggs of *Acrotylus* sp. (E. ARABIA : Oman, vi.1957 (G. Popov)). This female is strikingly different from the nominate form in colour, the thorax and first two tergites of the gaster being entirely red ; the frons and upper part of the face are duller than in typical *corion* and finely, densely rugose-reticulate, the sculpture developing into close transverse striation towards the antennal insertions. Two males bred with this female are entirely black with hyaline wings but in sculpture they are similar.

- Mesoscutum without these even ridges ; lateral, dorsal surface of pronotum with erect, or semi-erect, not setiform, hairs . . .
- 5 Hind tibia with long, upstanding hairs. (Hairs of upper surface of head, of thorax and of gaster all long, brownish, upstanding ; head and thorax dull metallic blue ; sculpture of vertex between the ocelli consisting only of vague punctation ; front part of mesoscutum with irregular punctation on an almost smooth surface ; posteriorly surface becomes rugose-reticulate ; scutellum virtually with no trace of longitudinal elements in its weak, punctate-reticulate sculpture ; in a facial view of the head, distance between eyes across anterior ocellus greater than length of eye, 15 : 11 approx.) **antorides** sp. n.

CAPE PROVINCE : Mossel Bay, v.1921, 2 ♀, one the type, ii.1922, 1 ♀ ; Ceres, 1500 feet, i.1921, 1 ♀ ; Camps Bay, ix.1920, 1 ♀ (R. E. Turner). Characterised by the upstanding hairs of the legs.

- Hind tibia without upstanding hairs . . .

- 6 Sculpture of mesoscutum much reduced but variable in intensity, indicated by a broken series of irregularly shaped foveae along the middle line and along the course of the notaulices; on posterior third, these 3 lines flow together to form an area of indefinite punctate-reticulation. (Head and thorax black with gaster dull reddish; upper surface of head smooth and almost unsculptured; front part of thorax with only long, brownish, almost erect hairs; hairs of gaster less upstanding than those of *nitens* Brues and *antorides* sp. n., but projecting from sides of gaster when this is seen from above as in these two species; in a front view of the head, distance between eyes across anterior ocellus greater than length of eye, as in *antorides*) **habilis** sp. n.

CAPE PROVINCE: *Mossel Bay*, ii. 1922, 1 ♀, the type; *Cape Town, Milnerton*, i. 1926, 2 ♀; *Ceres*, ii. 1925, 1 ♀ (all R. E. Turner). The female from *Ceres* has the mesoscutum much more sculptured than the others, the lines of foveation becoming bands of rugose reticulation which widen behind and coalesce over the posterior half of the mesoscutum. This specimen still shows 4 longitudinal zones that are polished and virtually unsculptured; in the other specimens, the mesoscutum is characteristic because a polished, unsculptured surface predominates.

- Mesoscutum sculptured all over 7
- 7 Gaster with only inconspicuous, adpressed hairs; in a dorsal view of gaster hairs do not stand out almost at right angles to edge of gaster as in the other species of the subgroup (except *corion*); head and thorax black; hairs of lateral, dorsal surface of pronotum and of front part of mesoscutum almost setiform and semidecumbent (approaching *corion* but markedly different in this respect from *nitens* and *habilis*); head between ocelli with a fine, vague reticulation that fades out towards occiput and temples. (Eyes closer together than in other species of the subgroup, distance between them across anterior ocellus, when head is seen from in front, hardly greater than length of one of them; fore wing (fig. 27); sculpture of scutellum very variable, densely striate in two specimens (*Mossel Bay* and *Van Reenen*), reticulate with hardly a trace of longitudinal elements in the other two; hind tibia with short, adpressed hairs)

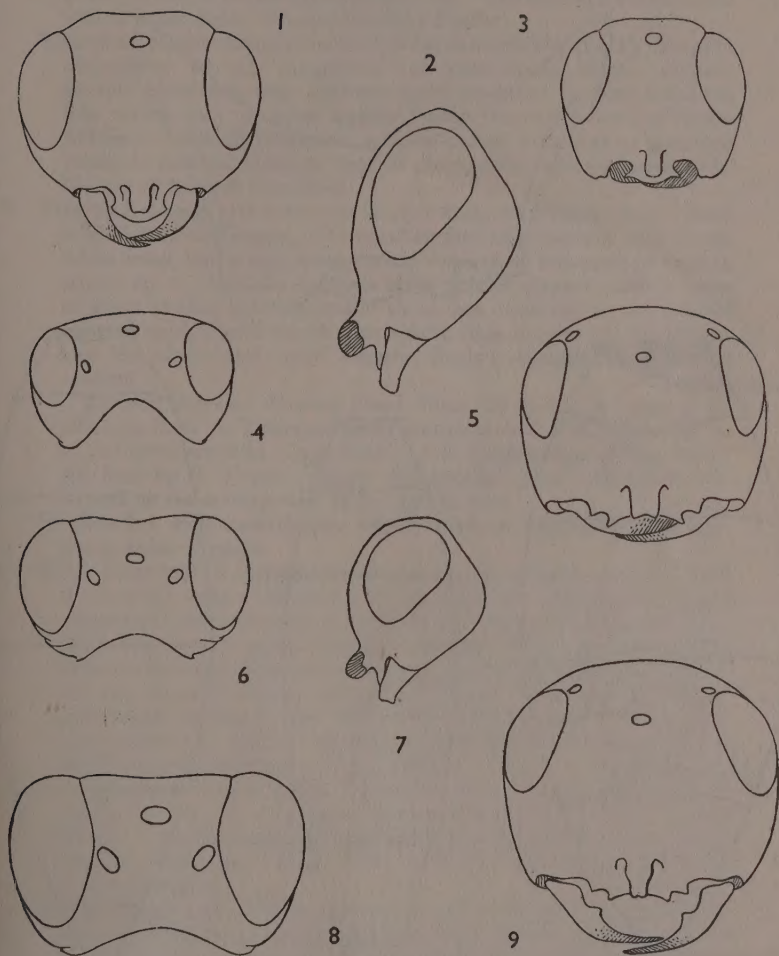
pulchripennis Brues

CAPE PROVINCE: *Mossel Bay*, v and vi, 2 ♀. ORANGE FREE STATE: *Harrismith*, iii, 1 ♀. NATAL: *Van Reenen*, i, 1 ♀ (all R. E. Turner). In lacking upstanding, bristly hairs, this species comes nearest to *corion* and is separable from it mainly on the sculpture of the mesoscutum.

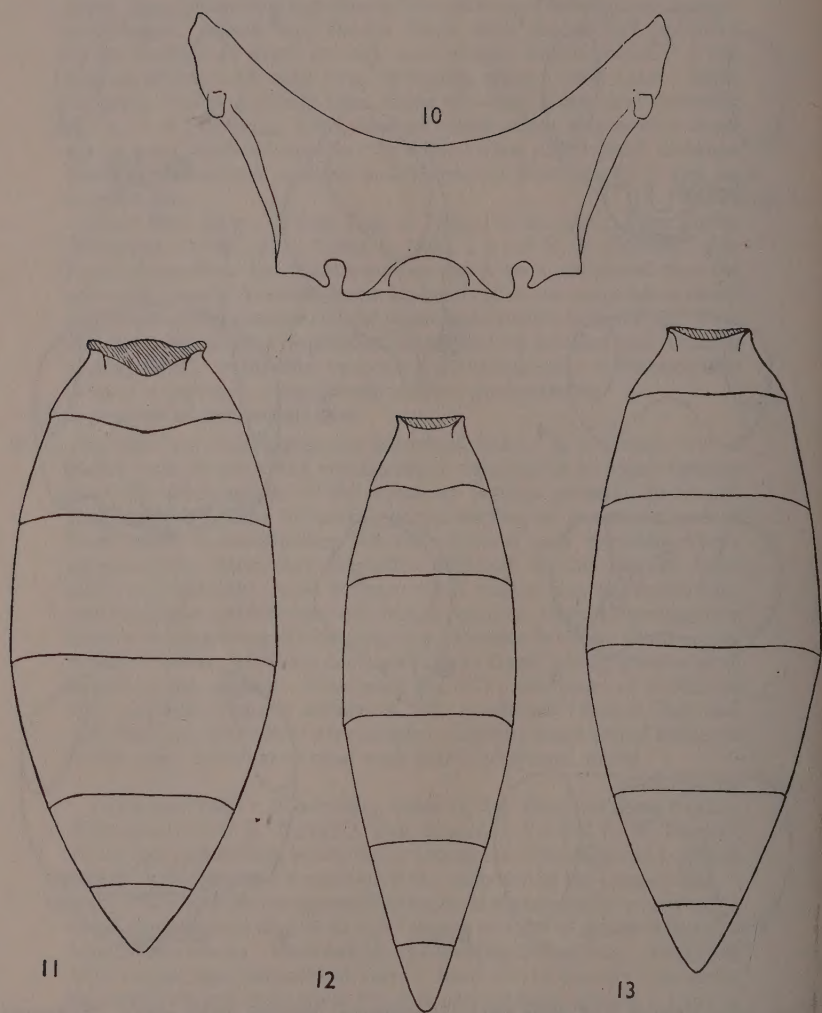
- Gaster with conspicuous, upstanding hairs, more especially posteriorly; these standing out almost at right angles to edge of gaster when this is seen from above; head and thorax dark metallic green; hind tibia with longer, semidecumbent hairs; head above densely reticulate, the sculpture not fading out towards occiput and temples; hairs of lateral, dorsal surface of pronotum and front part of mesoscutum brownish, almost erect, not setiform **marbis** sp. n.

CAPE PROVINCE: *Queenstown*, 3500 feet, 16.i-10.ii.1923, 2 ♀, one the type (R. E. Turner). Because of its metallic head and thorax, this species could be confused only with *nitens* Brues but differs from this species strikingly in the sculpture of the mesoscutum.

- 8 In a facial view of head (fig. 9), cheeks hardly rounded towards mandibles; mandibles very large; clypeus 4-dentate, the edge between the widely spaced middle pair of teeth straight or slightly concave



FIGS. 1-9.—Head of ♀ of *Scelio* spp.: (1) *sudanensis* Ferrière (facial view); (2) *howardi* Crawford (lateral); (3) *chapmanni* sp. n. (facial view); (4) *africanus* Risbec (from above); (5) *popovi* sp. n. (facial view); (6) *taylori* sp. n. (from above); (7) *cheops* sp. n. (lateral); (8) *exaratus* Kieffer (from above); (9) *remaudieri* Ferrière (facial view).



FIGS. 10-13.—(10-11) *Scelio howardi* Crawford, ♀, (10) propodeum; (11) gaster. (12-13) Gaster of ♀ of: (12) *S. mauritanicus* Risbec; (13) *S. sudanensis* Ferrière.

but without a convex lobe; area of short, dense pubescence immediately behind propodeal spiracle separated more or less by a zone of looser, slightly longer hairs from large tuft of pubescence at posterior lateral extremity of propodeum. (All femora thickened and with a basal stalk. Group of *walkeri* Kieffer)

- Thus seen, cheeks strongly rounded towards mandibles (fig. 1), except in *chapmanni* sp. n.; mandibles not particularly large; clypeus sharply bidentate, edge between teeth produced to form a convex lobe which may at apex appear feebly truncate; area of dense pubescence behind propodeal spiracle united with that at posterior corner to form an elongate zone of short, dense, silvery pubescence. (Group of *howardi* Crawford)

- 9 Tergites 2-4 each with a discrete zone of white, adpressed setae. (Head behind eyes and lateral, horizontal surface of pronotum with dense, white setae, less conspicuous than in *remaudieri* but more so than in *popovi* sp. n., distance between inner pair of clypeal teeth 4 times as great as that between one of them and outer tooth; in a facial view of head, cheeks slightly straighter than in *remaudieri*; vertex also less shiny and more densely, finely reticulate than in this species)

FRENCH SUDAN: *Central Flood Plain*, 23 ♀, 6 ♂, ex eggs of the following hosts: — *Eyprepocnemis senegalensis* I. Bol., ? *Trilophydia* sp., ? *Chrotogonus* sp. Type female: i-iii. 1956, ex eggs of Eyp. seneg. All bred by G. Popov. Easily distinguished from *remaudieri* and *popovi* on the arrangement of the gastral setae.

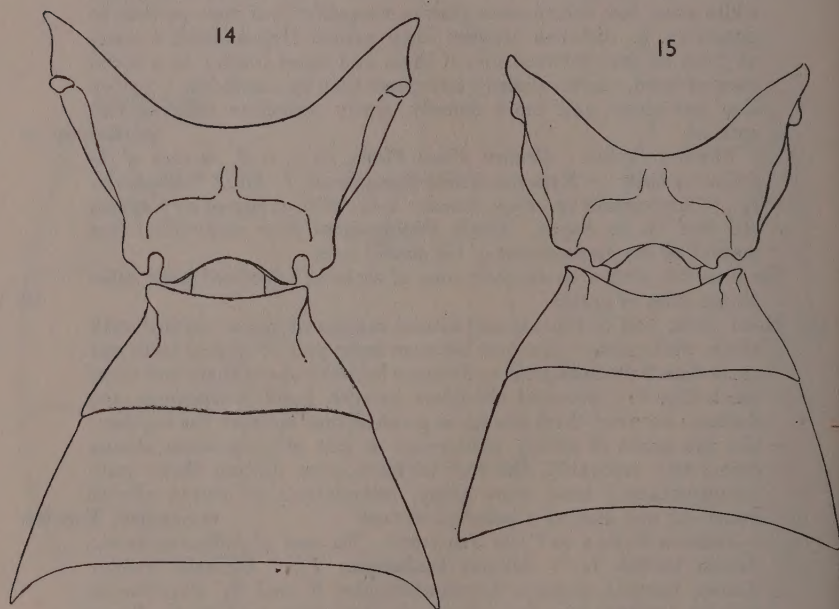
- Tergites 2-4 with a continuous zone of setae or adpressed hairs margining sides of gaster
- 10 Head, front half of thorax, and lateral margin of gaster clothed with thick, white setae; distance between inner pair of clypeal teeth not more than 3 times as great as distance between one of them and outer tooth (fig. 9); pronotal shoulders sharper, more conspicuous, the distance between them almost as great as that between the tegulae; the two zones of silvery pubescence at side of propodeum almost completely separated, the tuft of loose hairs uniting them quite inconspicuous; head more shiny, reticulations of vertex almost faded out and leaving a polished surface

FRENCH SUDAN to CAPE PROVINCE. Ex eggs of following hosts: *Acrida turrita* L., ? *Ailopus thalassinus* F., ? *Duronia tricolor* Karny, *Locusta migratoria migratorioides* R. and F., *Paracinema tricolor* ? sudanensis Key. From all these hosts bred by G. Popov in French Sudan.

- At least upper part of frons and vertex and front part of thorax with thinner, much less conspicuous setae that are brownish; lateral margin of gaster with only fine, inconspicuous brownish, closely adpressed hairs; distance between inner pair of clypeal teeth considerably greater, fully 4 times as great as distance between one of them and outer tooth (fig. 5); pronotal shoulders less conspicuous and less sharp, the distance between them obviously less great than that between the tegulae; the two zones of pubescence at side of propodeum less clearly separated; head less shiny, reticulations of vertex slightly denser but still very delicate

E. ARABIA: *Oman*, 83 specimens, bred vi. 1957 ex eggs of *Acrotylus* sp. (G. Popov); type female bred 9.vi. The dorsum of tergites 3 and 4 in this species shows an extremely fine, fairly dense pubescence; in re-

maudieri these tergites are almost bare medially. The fore wing of *popovi* is abruptly and quite strongly darkened distal to the stigmalis; *remaudieri* has the fore wing much less darkened apically. In a facial view and with regard to the sculpture and vestiture of the vertex this species is hardly distinguished from *gaudens*. That it is perhaps more closely related to *gaudens* than to *remaudieri* is supported by the shape of the clypeus of the male (cf. fig. 19). In *facies* *popovi* is extremely like the European *walkeri* Kieffer but whereas in *walkeri* the sculpture of the mesoscutum and of the scutellum tends to be reticulate rather than striate, in *popovi* the reticulations are straightened out to form longitudinal wrinkles or striations; the distance between the inner pair of clypeal teeth is shorter in *walkeri* than in *popovi* but the general vestiture of the body is almost the same in the two species.



FIGS. 14-15.—Propodeum and base of gaster of ♀ of: (14) *Scelio sudanensis* Ferrière; (15) *S. cheops* sp. n.

- 11 Seen from above, side of propodeum between spiracle and posterior orifice angled, subangled or merely rounded but without a free projection (figs. 16 and 18) 12
- Thus seen, side of propodeum shows posteriorly a free projection that is more or less truncate or subbidentate at apex (figs. 14 and 15); between this projection and the orifice is a small semicircular emargination 15
- 12 Edge of propodeum (seen from above) between spiracle and orifice forming an almost even curve (sometimes feebly angled) (fig. 16); vertex with sculpture so weakened that only a vague, extremely fine punctate-reticulation remains; first segment of gaster at least

2.5 times as wide apically as long medially. (Temples more strongly produced backwards than in any other species in this key (fig. 4); antenna (fig. 24); gaster predominantly reddish (fig. 25); fore wing strongly embrowned, the stigmalis lying within a still darker cloud; neck of pronotum above dull and rugulose; cheeks and lateral, dorsal surface of pronotum with thick, silvery setae; seen from the side, the lateral pubescent zone of the propodeum widens behind)

africanus Risbec

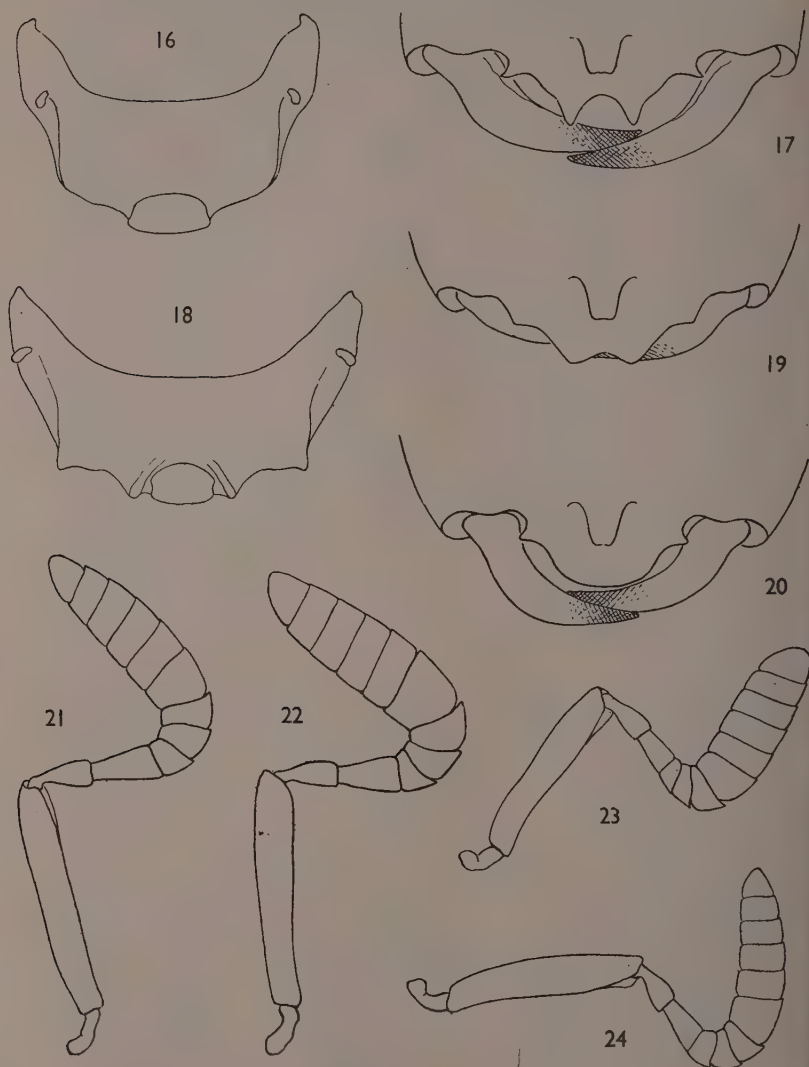
TANGANYIKA: *Rukwa Rift, Kafukola*, 8 ♀, 1 ♂, ex *Acridiid* eggs (R. F. Chapman). CAPE PROVINCE and ORANGE FREE STATE, 8 ♀, 27 ♂ (R. E. Turner).

- Edge of propodeum between spiracle and orifice strongly angled, dentiform; vertex without such fine sculpture; tergite 1 at most two and a third times as wide apically as long medially 13
- 13 Head in facial view with cheeks only feebly rounded towards mandibles (fig. 3) and thus seen subquadrate. (Clypeus only very feebly convex between its teeth; mandible on basal third delicately scaly-reticulate; club of flagellum shorter and stouter than in *mauritanicus* Risb. (fig. 23); scape bright reddish-yellow; head from above considerably less transverse than in *mauritanicus* with the eyes closer together; sculpture of mesoscutum closer, less shiny, its setae more distinctly red, more numerous and less conspicuous; scutellum more finely and more closely reticulate; gaster less elongate than in *mauritanicus* with tergite 1 more transverse (cf. fig. 12); edge of propodeum behind spiracle hardly different from that of *mauritanicus* and with lateral pubescent zone as in that species (cf. fig. 18); length 3.5 mm.) **chapmanni** sp. n.

TANGANYIKA: *Kafukola, Rukwa Rift*, 1 ♀, the type, bred from *Acridiid* eggs, 27.xi.1956 (R. F. Chapman). *Very distinct on shape of head.*

- Head in facial view with cheeks strongly rounded towards mandibles 14
- 14 Head behind eyes with dense silvery setae; lateral, dorsal surface of pronotum with silvery setae; no midway-situated longitudinal keel between the hardly indicated keel bordering back of eyes and occipital margin; head longer and less narrowed behind eyes; antenna (fig. 21); setae of frons mostly silvery; mesoscutum sloping more gradually in front to pronotum; gaster longer, narrower (fig. 12); fore wing not or hardly reaching beyond apex of tergite 6. (Between posterior ocelli is a transverse linear zone that is highly polished and almost without sculpture; dorsum of neck of pronotum polished, smooth; mesoscutum with wide meshed reticulations that tend to be arranged in rows but no indication of notaulices, propodeum (fig. 18); fore wing strongly embrowned but stigmalis lying within a slightly contrasted paler area; setae at sides of tergites 4-6 rather thin, reddish-golden; gaster sometimes reddish; scape yellowish; length: ca. 4.5 mm.) **mauritanicus** Risbec

TANGANYIKA: *Kafukola, Rukwa Rift*, 41 ♀ (gaster blackish), 1 ♂, bred i.1956, ex eggs of *Catantops axillaris saucius* Burm. (R. F. Chapman); 7 ♂, bred i.1956 ex eggs of *Eyprepocnemis* sp. (R. F. C.); *Rukwa Valley*, 12 ♀ (gaster mostly reddish), ex eggs of ? *Eyprepocnemis* sp. (T. H. C. Taylor). *Three series, comprising 22 ♀ and 1 ♂ from ERITREA: Wakhiro* (D. J. Greathead), are consistently smaller than typical *mauritanicus*, being from 3 to 3.2 mm. in length but I can find very little else that would justify, in my opinion, a specific separation;



FIGS. 16-24.—(16) *Scelio africanus* Risbec, ♀, propodeum; (17) *S. gaudens* sp. n., ♂, lower part of face to show clypeus; (18) *S. mauritanicus* Risbec, ♀, propodeum; (19) *S. popovi* sp. n., ♂, lower part of face to show clypeus; (20) *S. remaudieri* Ferrière, ♂, same. (21-24) Antenna of ♀ of: (21) *S. mauritanicus* Risbec; (22) *S. taylora* sp. n.; (23) *S. chapmani* sp. n.; (24) *S. africanus* Risbec. (The four antennae drawn to same scale).

the gaster of the female is shorter, with the fore wing reaching to about the middle of tergite 7; the head is slightly less transverse and the vertex between the ocelli is more or less without the characteristic smooth, linear zone of typical mauritanicus, this area being crossed by delicate, longitudinal wrinkles. The hosts of these three series are: *Pygomorpha* sp., *Catantops* ? *axillaris* Th. and *Ochrilidia gracilis* Krauss.

- Head behind eyes with reddish, inconspicuous, sparse setae; between the well developed keel bordering eyes behind and occipital margin is a longitudinal, fairly well defined, midway-situated keel (fig. 6); head shorter and more narrowed behind eyes; mesoscutum falling more abruptly to pronotum; gaster shorter; fore wing reaching to apex of tergite 7. (A species with short, quite inconspicuous red-gold setae on head, dorsal parts of pronotum and mesoscutum, these parts appearing, at first sight, black and bare; flagellum thicker than in *mauritanicus*, the whole antenna long and powerful for the size of the insect (fig. 22); meshes of reticulations of front part of mesoscutum somewhat characteristically larger than elsewhere, their sides more raised than in *mauritanicus*; dorsum of neck of pronotum smooth and polished; gaster (fig. 26); length: 3.5 mm.) **taylori** sp. n.

UGANDA: *Toro*, 1 ♀, the type, iv. 1941 (T. H. C. Taylor); *Kawanda*, 1 ♀, ii. 1941 (T. H. C. T.).

- 15 Sculpture of mesoscutum over its greater, medial part consisting of smooth, parallel ribs on an almost smooth surface; eyes very close together, the distance between one of them and anterior ocellus not quite twice diameter of ocellus (fig. 8); sides of tergites 2-4 sharply discrete, vertical, polished and each with a discrete zone of silvery setae in apical half; outer surface of middle tibia without short, bristly hairs on apical half. (Scutellum rather strongly raised, cushion-like, deeply and very coarsely rugose-reticulate; propodeal projection slightly wider at apex than in *howardi* (cf. fig. 10))

exaratus (Kieffer)

(= *Enneascelio exaratus* Kieffer, **syn. n.**)

SEYCHELLES. Type female in *British Museum* (Nat. Hist.). The genus *Enneascelio* was founded on a so called lengthening of the pronotum, but the shape of this sclerite is like that found throughout the genus and provides no basis for the erection of a genus. This is a large species, ca. 5.5 mm. and very distinct from the other members of the *howardi*-group.

- Mesoscutum more or less evenly striate-reticulate; eyes further apart, the distance between one of them and anterior ocellus considerably more than twice the diameter of the ocellus; sides of tergites 2-4 much less sharply discrete and less polished and either with a continuous, longitudinal zone of setae or with hardly a trace of setae; outer surface of middle tibia with very short, not readily seen, bristles on apical half

16

- 16 Notaulices indicated by a row of reticulations arranged in the form of a chain; gaster more elongate (figs. 13 and 14); tergite 3 one and a half times as wide as long. (Head (fig. 1) behind eyes and lateral, dorsal surface of pronotum with dense, silvery setae. In size resembling *howardi* but fore wing less embrowned, with radial cell area less contrasted with darker part outside; mesoscutum more convex; scutellum evenly reticulate and without longitudinal ridges; posterior propodeal projection more narrowed towards apex, obliquely truncate and not having the appearance of being sub-bidentate;

shelving sides of tergites 2-4 with finer, less dense setae than in *howardi*) **sudanensis** Ferrière

FRENCH SUDAN. Bred in abundance by G. Popov from the egg pods of *Locusta migratoria migratorioides* R. and F. Also bred from *Eyprepocnemis senegalensis* I. Bol. (7 ♀, 1 ♂) and ? *Ailopus thalassinus* F. (2 ♀). This species is extremely like *zlotarevskyi* Ferrière from Madagascar and also bred from *Locusta migratoria migratorioides*, differing from it only in small comparative details; the posterior propodeal projection of *zlotarevskyi* approaches the bidentate condition seen in *howardi*; the gaster is slightly less elongate than in *sudanensis* with tergite 1 more transverse; the reticulations of the face are coarser than in *sudanensis*. Only the type series of 7 females is available in the British Museum and, in the absence of more material from Madagascar, I prefer not to regard *sudanensis* as a synonym of the older *zlotarevskyi*.

- Notaulices not indicated except sometimes feebly so in individuals of *howardi*; gaster less elongate, with tergite 3 fully one and two-thirds times as wide as long 17
- 17 Head behind eyes, lateral dorsal surface of pronotum and mesoscutum with only inconspicuous, thin, reddish-golden setae, these parts at first sight appearing bare and very black; pubescence of linear zone at side of propodeum very thin and inconspicuous; scape black; stigmalis more or less obliterated, thickened knob at apex of subcostalis large, dark; hind wing embrowned except for a narrow, hyaline zone, parallel with, and embracing, the subcostella. (Short spines on outer side of middle tibia, shorter, less numerous and less noticeable than in the two following species; hind tibial spur very short, hardly one-fourth as long as basal segment of hind tarsus; hardly a trace of longitudinal elements in the evenly reticulate sculpture of mesoscutum; none in that of scutellum; first segment of gaster less transverse than in *cheops* and *howardi* (cf. figs. 11 and 15), sides of tergites 2-4 polished and almost without sculpture, almost bare; scape with only a very weakly developed keel on inner side towards apex) **tristis** sp. n.
- UGANDA: *Ruwenzori*, 6000 feet, 1 ♀, the type, viii. 1941 (T. H. C. Taylor).
- Head behind eyes, lateral, dorsal surface of pronotum and mesoscutum with conspicuous, silvery, thickened setae with those on middle part of the mesoscutum becoming golden; hind wing hyaline; pubescence of linear zone at side of propodeum thick and conspicuous; scape yellow or reddish-yellow; stigmalis distinct throughout; knob at apex of subcostalis smaller and less darkened 18
- 18 Scutellum with several, sometimes broken, longitudinal ridges, its setae suberect and hence not conspicuous; scutellum with no trace of a longitudinal furrow; larger, ca. 5 mm.; emargination between propodeal projection and posterior orifice deep and conspicuous (fig. 10); head more transverse, subangled between frons and vertex (fig. 2); eyes slightly smaller, the distance between anterior ocellus and eye-margin fully 3 times as great as diameter of ocellus. (Fore wing deeply embrowned, almost yellowish towards base; the setae of this species particularly brilliant, becoming golden on top of head as well as on front part of mesoscutum; dorsum of pronotal neck rugose all over; gaster (fig. 11)). **howardi** Crawford
(= *aburiensis* Kieffer, syn. n.)

CAPE PROVINCE. TANGANYIKA. NYASALAND. S. RHODESIA. FRENCH SUDAN (bred by G. Popov from eggs in diapause of *Kraussia angulifera* Krauss. Bred in the above 3 middle localities from eggs of *Nomadacris septemfasciata* Serv., the host originally recorded by Crawford under the generic name *Cystacanthacris*).

A series of 28 ♀, 2 ♂ bred from *Catantops axillaris saucius* Burm. and another of 34 ♂ bred from *Acrida* sp. (both TANGANYIKA: Kafukola, Rukwa Rift) are consistently smaller than typical *howardi*, averaging 3 mm. Apart from this difference in size I can find nothing to support the possibility of these two series being specifically distinct from *howardi*.

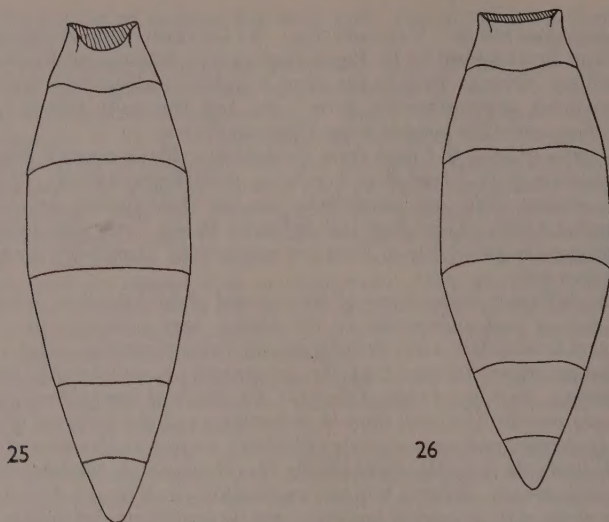
The difference in the degree of development of the notaulices between this species and *sudanensis* is not always easy to appreciate. *S. howardi* is altogether a less elongate species than *sudanensis*; its thorax is shorter, more flattened and the propodeum is considerably more transverse. In a facial view of the head, the cheeks of *howardi* are more strongly rounded (bulging) than in *sudanensis* and the sculpture of the face is stronger and more coarsely reticulate; in fact, in this view of the head, *howardi* resembles more closely the Madagascan *zlotarevskyi* than *sudanensis*. Between *howardi* and *sudanensis* there is a difference in the shape of the propodeal projection and the tergites are obviously more transverse in *howardi* than in *sudanensis*.

- Scutellum with very uneven rugose-reticulation, its setae almost decumbent and hence more noticeable than in *howardi*; scutellum with a more or less distinct, though feeble, longitudinal impression; smaller, ca. 3.5 mm.; head less transverse (fig. 7), evenly rounded between frons and vertex; eyes slightly larger and closer together on vertex; distance between anterior ocellus and eye-margin from two to two and a quarter times as great as diameter of ocellus; propodeal emargination less deep and posterior projection less well developed (fig. 15). (Fore wing evenly embrowned and not yellowish towards base; gaster as in *howardi* but not so densely nor so conspicuously setose along shelving sides of tergites 2-4; whole antenna and legs shorter than in *howardi*). *cheops* sp. n. u

FRENCH SUDAN: Central Flood Plain of Niger River, 6 ♀, one the type, bred iii. 1956 ex eggs of *Eyprepocnemis senegalensis* I. Bol. (G. Popov). The scutellum of this species has a subtly distinctive facies,

(2) Key to the African species of *Scelio* (males)

- 1 Seen from above, side of propodeum between spiracle and orifice shows posteriorly a free projection that is more or less truncate or subtruncate at apex (cf. fig. 14, ♀); between this projection and orifice is a small semicircular emargination 2
- Thus seen, side of propodeum here merely angled or subangled posteriorly or even simply rounded; orifice not separated from lateral corner by an emargination 3
- 2 Notaulices feebly indicated as a row of reticulations arranged in form of a chain; posterior propodeal projection more narrowed towards apex, obliquely truncate and not having appearance of being subbidentate. (Clypeus more produced and more evenly convex between its lateral teeth than in *howardi*; genitalia like those of *africanus* (cf. fig. 31)) *sudanensis* Ferrière



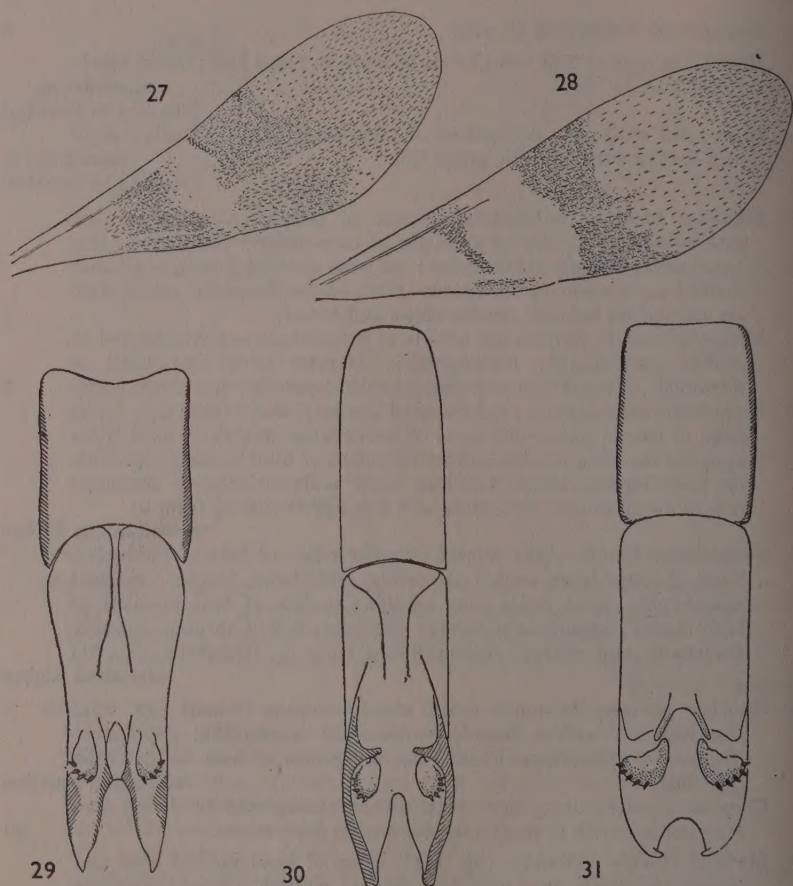
FIGS. 25-26.—Gaster of ♀ of: (25) *Scelio africanus* Risbec; (26) *S. taylora* sp. n.

- Notaulices not or much less distinctly indicated; posterior propodeal projection wider, sub-bidentate apically; gaster less elongate (setae of middle lobe of mesoscutum more adpressed, slightly thicker and somewhat golden; genitalia like those of *africanus* (cf. fig. 31))
- howardi** Crawford
- 3 Edge of propodeum between spiracle and orifice without trace of an angulation; propodeum flattened above and with delicate longitudinal wrinkles; laterally without an elongate area of dense silvery pubescence. (Lateral dorsal surface of pronotum and at least front half of mesoscutum with fine, brownish, upstanding hairs; edge of clypeus between its prominent, lateral teeth either straight or with indication of a feeble medial tooth; segment 5 of antenna virtually not differentiated from 6; gaster short, bluntly rounded behind; wings milky-white, without trace of fasciation found in females) 4
- Edge of propodeum here distinctly angled, sometimes obviously right-angled; propodeum laterally with an elongate zone of pubescence, sometimes interrupted at middle 7
- 4 Mesoscutum with its 3 lobes in greater part smooth, polished, except for an occasional pit-like depression; an irregular row of punctures along middle line and along notaulic courses develops posteriorly into an area of confluent, intricate rugosity. (Head faintly bluish; hind tibia without erect hairs) **habilis** sp. n.
(See key to females)
- Mesoscutum with at least the middle lobe in greater part sculptured 5
- 5 Posterior two-thirds of middle lobe of mesoscutum longitudinally striate and in sharp contrast with the highly polished, virtually smooth, lateral lobes. (Frons and vertex dull, with a dense, fine, rugose-reticulation; scutellum closely, evenly, striate all over; hind tibia without upstanding hairs) **corion** sp. n.
(See key to females)

- Mesoscutum sculptured all over 6
- 6 Hind tibia with almost erect hairs, at least on basal half ; body black.
(Genitalia, fig. 30) **antorides** sp. n.
(See key to females)
- Hind tibia with only decumbent or almost decumbent hairs ; head
and thorax with metallic green tint **marbis** sp. n.
(See key to females)
- 7 Elongate band of pubescence at side of propodeum more or less
interrupted at middle by a cluster of loose hairs ; in any case this
band never sharply rectangular ; at least sternite 3 with a distinct
medial impression or flattened. (Propodeum laterally never with
an angulation behind ; gaster short and broad) 9
- Elongate band of pubescence at side of propodeum not interrupted at
middle and sharply rectangular ; sternites never impressed or
flattened. (Propodeum sometimes angled laterally ; gaster elongate) 8
- 8 Propodeum conspicuously right-angled laterally, almost dentate ; lower
edge of lateral pubescent band of propodeum straight ; hind tibial
spur not reaching to middle of first segment of hind tarsus ; mandible
on posterior two-thirds dull and finely scaly-reticulate ; segments
6-9 of antenna less transverse and less differentiated from 5
mauritanicus Risbec
- Propodeum hardly right angled ; lower edge of lateral pubescent
band of propodeum angled at middle ; this band, further, widened
posteriorly ; hind tibial spur reaching middle of first segment of
hind tarsus ; mandible polished ; segments 6-9 of antenna strongly
transverse and sharply differentiated from 5. (Genitalia, fig. 31)
africanus Risbec
- 9 Clypeus between its outer teeth evenly convex (lobed) (fig. 20) ;
sternites 3-5 with a broad, continuous, longitudinal depression.
(Segment 5 of antenna virtually not differentiated from 6 ; genitalia
(fig. 29)) **remaudieri** Ferrière
- Clypeus between its outer teeth either emarginate or bidentate ;
sternites 3-5 with at most a feeble, medial depression 10
- 10 Clypeus sharply bidentate (fig. 17) ; setae of head behind eyes and
lateral dorsal surface of pronotum thicker, whitish. (Head sometimes
having a bluish-black tint) **gaudens** sp. n.
(See key to females)
- Clypeus emarginate (fig. 19) ; setae of head behind eyes and lateral
dorsal surface of pronotum thinner, almost golden. (Head less
massive than in *gaudens* ; pronotum narrower across shoulders ;
head without a bluish-black tint) **popovi** sp. n.
(See key to females)

(3) *African species of Scelio not known to the author*

1. *Scelio afer* Kieffer, 1905, ♂. GAMBIA. Host unknown.
2. *Scelio baoli* Risbec, 1950, ♀. SENEGAL. Host unknown.
3. *Scelio clarus* Fouts, 1934, ♀. SOMALILAND. Host unknown. Almost certainly
related to the *walkeri*-group.
4. *Scelio ipomeae* Risbec, 1950, ♀. SENEGAL. Host unknown.



FIGS. 27-31.—(27-28) Fore wing of ♀ of: (27) *Scelio pulchripennis* Brues; (28) *S. princeps* sp. n. (29-31) Genitalia of ♂ of: (29) *S. remaudierei* Ferrière; (30) *S. antorides* sp. n.; (31) *S. africanus* Risbec.

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